CALCULUS.

254. Proposed by H. S. PARDEE, Boston, Mass.

A wire is wound in the form of a helix. Assuming that sections of the wire perpendicular to the axis of the wire are circles, find the equation of a section of the wire perpendicular to the axis of the helix.

MECHANICS.

214. Proposed by W. J. GREENSTREET, M. A., Marling School, Stroud, England.

An inelastic particle is projected in a direction BD from B in a straight line AB. It strikes a rigid line AD in D and returns to AB at C. Find AC/AB, and show on *a priori* ground that this ratio is independent of the velocity of projection.

NUMBER THEORY AND DIOPHANTINE ANALYSIS.

152. Proposed by H. S. VANDIVER, Bala, Pa.

When p is a prime of the form $5n\pm1$ then there is a positive integer a such that $a^2 \equiv 5 \pmod{p}$. Show that $\left(\frac{a\pm1}{p}\right) = \pm\left(\frac{-2a}{p}\right)$, according as p is of the form $5n+1$ or $5n-1$.

AVERAGE AND PROBABILITY.

195. Proposed by G. B. M. ZERR, A. M., Ph. D., 4243 Girard Avenue Philadelphia, Pa.

A random diameter is drawn in a given circle. Find the chance that it intersects, (1) a random chord; (2) a random chord through a random point; and (3) a chord through two random points.

NOTES AND NEWS.

We learn from the *Scientific American* of February 1, 1908, that Dr. Paul Wolfskehl, who died recently at Darmstadt, left in his will a provision for the payment of 100,000 marks to the first person who will prove or disprove "the last theorem of Fermat," viz., $x^n+y^n=z^n$, is not possible in integers for $n>2$. F.

The Fourth International Congress of Mathematicians will convene in Rome April 6th to 11th, 1908. Extensive preparations are announced for the entertainment of delegates and their friends. The deliberations of the Congress will be conducted under four sections, each provided with leaders of international reputation: (1) Arithmetic, Algebra, Analysis; (2) Geometry; (3) Mechanics, Mathematical Physics; (4) Philosophical, historical and didactic questions. Professor E. H. Moore, who is now sojourning in Italy, will represent The University of Chicago. S.